GENERAL MILLS, INC.
Engineering Research and Development Department
2003 E. Hennepin Ave.
Minneapolis 13, Minn.

APPENDIX I

FINAL REPORT

J-168

#1162 (142)

Flight Summary Reports

STAT

Report No.: 1162

Date: 17 Dec. 1952

ED-134E

1952

General Mills, Inc.

Mechanical Division

ENGINEERING RESEARCH & DEVELOPMENT DEPARTMENT

2003 EAST HENNEPIN AVENUE

MINNEAPOLIS 13, MINN.

8268 M D

GENERAL MILLS, INC.
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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.. 477 Date: 7 June 1951

Launch Site: U/M Airport Launching Time: 1807

Balloon Type: Dewey & Almy Serial No.: 54071-? Weight: 8.7

Who. NRL Mastenbrook - Fast Riser

What: Chute, R/S, ballast (sand)

Scheduled duration: Not applicable
Load on balloon: 8#

Actual duration: .4 hrs.

Gross load: 10.8# Free lift: 33# 198% gross load.

Maximum altitude: 40,000 ft. Rate of rist: 1480 ft/min to 40,000 ft.

Theoretical altitude: not applicable Altitude maintenance: none

Recovery: where? Osceola, Wisconsin
when? 1700, 17 June 1951

Balloon success:

Scientific Purpose:

Evaluation of fast rising rubber balloon.

Scientific Success as Known:

The rate of rise was not as high as desired. Other systems and techniques are to be tried to increase the rate of rise.

Critique:

Orifice opening in balloon neck 0.75 inch in diameter. Balloon had been heat treated 3 days prior but had not been re-treated at time of flight.

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FLIGHT REPORT

Flight No.: 479 Balloon Serial No.: 54071-25

Date: 6-7-51 Launching time: 1947 Type: Dewey & Almy Weight: 8#

Who: NRL Mastenbrook Fast Riser

What: Radiosonde

Duration: 0.4 to burst Load on balloon: 8#

Gross load: 16# Free lift: 32# 195% gross load

Maximum Altitude: 41,900 feet Rate of rise: 1740 ft/min to 41,000 ft.

Theoretical altitude: not applicable Altitude maintenance: None

Recovery: where? none to 8-15-51

Balloon success: yes

Critique:

Orifice opening 0.62 in. diameter
Balloon was not heat treated.

Scientific Purpose:

Evaluation of fast rising rubber balloon.

Scientific Success as Known:

A high rate of rise was obtained to 41,000 feet. The rate of rise was not as high as desired. Other systems are to be tried to increase the ascent rate.

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FLIGHT REPORT

Flight No.: 546 Date: 8-10-51

Launch Site: U/M Launching Time: 1601 CST

Balloon Type: D & A Serial No.: Weight:

Who: J-168 NRL Mastenbrook Load on Balloon:

What: Radiosonde Free Lift # 30 % gross load

Actual Duration: Unknown Rate of Rise: 1200 ft/min to 26,800 ft.

Gross Load: Altitude Maintenance:

Maximum Altitude: When? 9-14-51

Theoretical Altitude: ---

Recovery: Where? 7 mi. N.E. Clear Lake, Wisc.

Balloon Success:

Scientific Purpose: Evaluation of fast rising rubber balloon system.

Scientific Success: Telemetering signal faded at 30,000 ft.

Critique:

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FLIGHT REPORT

Flight No.: 626 Date: 24 September 1951

Launch site: U. of M. Airport Launching time: 1200 C

Balloon type: D & A Serial No.: 56511-1 Weight: 8

Who: J-168 Mastenbrook Fast Riser

What: Radiosonde Valve

Scheduled duration: Not applicable Load on balloon: 8#

Actual duration: Unknown

Gross load: 16# Free lift: 16# 100% gross load.

Maximum altitude: Unknown Rate of rise: Unknown

Theoretical Altitude: Not applicable Altitude maintenance: Not applicable

Recovery: where? 9 Mi. E Sheldon, Wisc. when? 1600 24 Sept. 1951

Balloon success: Unknown

Scientific Purpose:

Evaluation of fast rising rubber balloon system.

Scientific Success as Known:

Unknown because of telemetering failure (Modulator pen arm seemed to "stick" on one contact).

Critique:

Balloon preheat: 3 min @ 140° F

Valve setting: 1.2" H_2O (2 Ethyl Hexyl Acetate used as liquid).

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FLIGHT REPORT

Flight No.: 627 Date: 24 September 1951

Launch site: U. of M. Airport Launching time: 1346.1 C

Balloon type: D & A Serial No.: 56511-2 Weight: 8

Who: NRL Mastenbrook, Fast Riser

What: R/S Valve

Scheduled duration: None Load on balloon: 8#

Actual duration: Unknown

Gross load: 16# Free lift: 16# 100% gross load.

Maximum altitude: 74,800 ft. Rate of rise: $\frac{1520}{695}$ ft/min to $\frac{50,400}{74,800}$ ft.

Theoretical Altitude: Not applicable Altitude maintenance: Not applicable

Recovery: where? None to 10-8-51

Balloon success: Yes

Scientific Purpose: Evaluation of fast rising rubber balloon system

Scientific Success as Known: Rate of rise was not as high as desired.

Critique: Balloon Preheat: 3 min @ 140° F

Valve setting: 1.2" H_2O (2 ethyl hexyl acetate used as liquid).

Telemetering was fair.

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FLIGHT REPORT

Flight No.: 631 Date: 1 October 1951

Launch site: U. of M. Airport Launching time: 1007.8 C

Balloon type: D & A Serial No.: 56511-6 Weight: 10

Who: J-168 NRL Mastenbrook Fast Riser

What: Radiosonde, Valve

Scheduled duration:

Actual duration: .3 to Burst Load on balloon: 6#

Gross load: 16# Free lift; 16# 100% gross load.

Maximum altitude: 27,600 ft. Rate of rise: 1460 ft/min to 27,600 ft.

Theoretical Altitude: Not applicable

Recovery: where? 2 Mi. S. Albertville, Wisc. when? 10-1-51 ~1230C

Balloon success: Yes

Scientific Purpose:

Evaluation of fast rising rubber balloon systems.

Scientific Success as Known:

Rate of rise was not as high as desired. Maximum altitude was lower than desired.

Critique:

Balloon preheat: none

Valve setting: 1.8" H_2O (2 ethyl hexyl acetate used as liquid).

Telemetering fair.

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FLIGHT REPORT

Flight No.: 632 Date: 1 October 1951

Launch site: U. of M. Airport Launching time: 1106 CST

Balloon type: D & A Serial No.: 56511-7 Weight: 8

Who: J-168 NRR Mastenbrook Fast Riser

What: Radiosonde, Valve

Scheduled Duration:

Actual duration: 0.2 to Burst Load on balloon: 8#

Gross load: 16# Free lift: 16# 100% gross load.

Maximum altitude: 18,600 ft. Rate of rise: 1360 ft/min to 18,600 ft.

Theoretical Altitude: Not applicable. Altitude maintenance: Not applicable.

Recovery: where? 10 Mi. S. Amherst, Wisc. when: Oct. 2

Balloon success: Yes

Scientific Purpose:

Evaluation of fast rising rubber balloon system.

Scientific Success as Known:

Rate of rise was not as high as desired.

Critique:

Balloon preheat: none

Valve setting: 1.6" H_2O (2 ethyl hexyl acetate used as valve liquid).

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FLIGHT REPORT

Flight No.: 633 Date: 1 October 1951

Launch site: U. of M. Airport Launching time: 1346.6C

Balloon type: D & A Serial No.: 56511-8 Weight: 8

Who: J-168 NRL Mastenbrook Fast Riser

What: Radiosonde, Valve

Scheduled duration: Load on balloon: 8#

Actual duration: 0.3 to Burst

Gross load: 16# Free lift: 16# 100% gross load.

Maximum altitude: 23,700 ft. Rate of rise: 1400 ft/min to 23,700 ft.

Theoretical Altitude: Not applicable Altitude Maintenance: not applicable

Recovery: where? 5½ S.E. Marshfield, Wisc. when: 0900-Oct. 2

Balloon success: Yes

Scientific Purpose:

Evaluation of fast rising rubber balloon system.

Scientific Success as Known:

Rate of rise was lower than desired.

Critique:

Balloon preheat: 3 min. @ 140° F

Valve setting: 1.2" H_2O (2 ethyl hexyl acetate was used as valve liquid).

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FLIGHT REPORT

Flight No.: 670 Date: 3-11-52

Launch site: U. Airport Launching time: 1517.5C

Balloon type: Neo Prene NRL-Design Serial No.:

Who: NRL-Mastenbrook - Fast Riser Weight; 11.6#

What: Radiosonde, Chute, Ballast

Scheduled duration: Load on Balloon:

Actual duration: 0.7 hrs. to burst Gross Load: 25#

Free Lift: 26.6# 106% gross load Rate of Rise: 1985 ft/min to 86,200 ft.

Maximum Altitude: 86,200 Altitude Maintenance: None

Theoretical Altitude:

Recovery: where? none to 4-7-52 when?

Balloon Success: Excellent

Scientific Purpose: Development of fast rising balloon, with two balloons to utilize ballonet principle.

Scientifc Success as Known: Excellent

Critique: At completion of inflation a bubble was quite apparent on side of balloon. Initial oscillations were circular and with about 40° cone angle, at first moderate, becoming light.

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FLIGHT REPORT

Flight No.: 684 Date: 3-11-52

Launch site: U. Airport Launching time: 1802.4 C

Balloon type: Neoprene NRL-Design Serial No.: 60483-14

Who: J-168 Fast Riser Weight:

What: Radiosonde Model AN-AMT - 7 400 MC

Scheduled duration: Load on balloon: 12#

Actual duration: 0.66 hrs. Gross load: 23.26#

Free lift: 23.26# 100% gross load Rate of Rise: 2760 ft/min to 53,300 ft.

Maximum altitude: 53,300 ft. Altitude maintenance:

Theoretical Altitude: Balloon success: Good

Recovery: where? None to 4-7-52

Scientific Purpose: Development of fast rising balloon by applying conical section to lower portion.

Scientific Success as Known: Excellent

Critique: Good symmetry. Lower cone definitely flabby giving rise to sever flutter. No rotation. Oscillation moderate becoming light. Balloon was special design of NRL, Mastenbrook, comprising a conical section of one balloon cemented to a spherical one.

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FLIGHT REPORT

Flight No.: 692 Date: 3-26-52

Launch Site: U. Airport Launching time: 1348 C

Balloon type: D.A. Serial No.: 60494-13

Who: NRL - Mastenbrook - Fast Riser Weight: 2925 gm.

What: Rasonde, Ballast, Chute Load on Balloon: 13#

Scheduled duration: none Gross Load: 19.44#

Actual duration: unknown Free Lift: 19.44#, 100% gross load

Maximum Altitude: unknown Rate of Rise: unknown

Theoretical Altitude: - - - Altitude Maintenance:

Recovery: where? 3 mi. E. Hudson, Wisc. when? 2 April 1952

Balloon success:

Scientific Purpose: Development of fast rising balloon.

Scientific Success as Known: Same results obtained from experiment.

Critique: Balloon simmetrical and nearly spherical (very slightly prolate), with small cone. During ascent the oscillators were moderate with about 40° cone angle, becoming slight. Rasonde failed to shift contacts (signal was okay), indicating possibility of defective bellows. Estimated rate of rise less than 2,000 fpm.

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FLIGHT REPORT

Flight No.: 693 Date: 3826-52

Launch site: U Airport Serial No.: 64334 (94°)

Balloon type. D.A. Special Launching time: 1552.7

Who: NRL - Masstenbrook - Fast Riser Weight: 2900 gm.

What: Rasonde, Ballast, Chute Load on Balloon: 13#

Scheduled duration: none Gross load: 19.38#

Actual duration: 34 min. to burst Free Lift: 19.38#, 100% gross load

Maximum Altitude: 57,700 ft Rate of Rise: 1705 ft/min to 57,700 ft

Theoretical Altitude: - - - Altitude Maintenance: none

Recovery: where? River Falls, Wisc. when?

Balloon success:

Scientific Purpose: Development of fast rising balloon.

Scientific Success as Known: Good experiment.

Critique: Balloon of good symmetry, nearly spherical, slightly prolate, small cone. Early oscillations in about 45° arc, becoming slight. Burst at 1626.5 app. 55,000'.

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FLIGHT REPORT

Flight No.: 814 — Date: 14 April 1952

Launch site: U/M Airport — Launching time: 1750.5C

Balloon type: D-A N-28 — Serial No.: 60483-4 6094-11

Who: J-168 NRL Fast Riser — Weight: 5.5# 6.8#

What: Baroswitch Radiosonde — Gross Load: 25.7#

Scheduled duration: — Load on Balloon: 13.4#

Actual duration: 0.6 to burst — Free lift: 20.56# 80% gross load

Maximum altitude: 56,500 ft. — Rate of rise: 1523 ft/min to 56,500 ft.

Theoretical altitude: — Altitude Maintenance: None desired

Recovery: where? None to 4-17-52

Balloon Success: Excellent

Scientific Purpose:

To study and develop rapid rising extensible balloon. In this flight, free lift was decreased from that used in previous similar tests to determine effect upon performance.

Scientific Success as Known:

An excellent experiment.

Critique:

Oscillations were circular and with about 30° cone angle. The symmetry of the balloon was good and prolate.

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FLIGHT SUMMARY

Flight No.: 849 Balloon Serial No.: Unknown

Date: 26 June 1952 Launching time: 1618.4 Type: D-A Weight: 11.1#

Who: NRL Mastenbrook - Fast Riser

What: Radiosonde, Baro, Sand Ballast, chute

Duration: Unknown Load on Balloon: 12#

Gross Load: 23.1# Free Lift: 9.2# 39.8% gross load

Maximum Altitude: Unknown Rate of Rise: 1162 ft/min to 28,280 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-5-52

Balloon Success: Unknown

Scientific Purpose: Fast Riser

Scientific Success as known:

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Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 857 Balloon Serial No.: FR4A

Date: 15 July 1952 Launching Time: 1244 Type: D-A Weight: 11.1#

Who: NRL Mastenbrook - Fast Riser

What: Radiosonde, Baro., Sand Ballast, Chute

Duration: 10 Min. Load on Balloon: 12#

Gross Load: 23.1# Free Lift: 9.2# 40% gross load

Maximum Altitude: 6,500 Rate of Rise: 761 ft/min to 6,500 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 6 Mi. NE. New Brighton, Minn.

Balloon Success: Poor

Critique: Balloon burst while rising.

Scientific Purpose: To test rates of rise on rapid rising balloons.

Scientific Success as Known.

Special Neoprene
Balloon

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FLIGHT SUMMARY

Flight No.: 883 Balloon Serial No.: J 8-241750

Date: 25 August 1952 Launching Time: 1351 Type: D-A Weight: 3.6#

Who: NRL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand

Duration: 2 hrs. 25 min. to impact Load on Balloon: 10#

Gross Load: 13.3# Free Lift: 3.3# 24.3% gross load

Maximum Altitude: Unknown Rate of Rise: 992 ft/min to 61,400 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? Lake Chisago, Minn.

Balloon Success: Excellent

Critique: The test of a new balloon type was very good.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

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FLIGHT SUMMARY

Flight No.: 802 Balloon Serial No.: JB 241750

Date: 23 Sept. 1952 Launching Time: 1049.5 Type: D-A Weight: 3.6#

Who: MML Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Duration: Unknown Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 6.6# 48.5% gross load

Maximum Altitude: Unknown Rate of Rise: 1382 ft/min to 38,000 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-9-52

Balloon Success: Excellent

Critique: Very good flight, giving data on new balloon.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

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FLIGHT SUMMARY

Flight No.: 803 Balloon Serial No.: J 8-241750

Date: 23 Sept. 1952 Launching Time: 1341 Type: D-A Weight: 3.6

Who: NRL Masterbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Duration: 1 hr. 4 min. to burst Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 9.9# 72.8% gross load

Maximum Altitude: 86,500 ft. Rate of Rise: 1293 ft/min to 65,525 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 7 Mi. S. Lake City, Minn. when? 23 September 1952

Balloon Success: Excellent

Critique: Very good flight, giving data on new balloon.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

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FLIGHT SUMMARY

Flight No.: 804 Balloon Serial No.: J 8-341750

Date: 29 Sept. 1952 Launchint Time: 1024 Type: H-A Weight: 3.6#

Who: MAL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Durati n: 1 Hr. 37 Min. to burst Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 3.3# 24.3% gross load

Maximum altitude: 93,500 ft. Rate of rise: 953 ft/min to 93,300 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 10 Mi. NE Cadott, Wisconsin when? 12 October, 1952

Balloon Success: Excellent

Critique: Very good flight giving data on new balloon.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

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FLIGHT SUMMARY

Flight No.: 805 Balloon Serial No.: J 8-241750

Date: 29 Sept. 1952 Launching Time: 1404 Type: D-A Weight: 3.6#

Who: NRL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Duration: None Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 13.2# 97% gross load

Maximum Altitude: Rate of Rise:

Theoretical Altitude: Altitude Maintenance:

Recivery: where? U/M Airport when? Immediate

Critique: Balloon burst at take-off.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: None

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Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 806 Balloon Serial No.: J 8-241750

Date: 8 October 1952 Launching time: 1002 Type: D-A Weight: 3.6#

Who: MML Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Duration: 1 Hr. 7 Min to Burst Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 6.6# 48.5% gross load

Maximum Altitude: 82,000 ft. Rate of Rise: 1220 ft/min to 82,000 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 1/2 Mi. W. Bay City, Wisconsin when? October 12, 1952

Balloon Success: Excellent

Critique: Very good flight giving data on new balloon.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

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Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 807 Balloon Serial No.: J 8-241750

Date: 8 October 1952 Launching Time: 1246 Type: D-A Weight: 3.6#

Who: NRL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Duration: 56 Min to burst. Load on Balloon: 10#

Gross Load: 13.6# Free Lift: 9.9# 72.8% gross load

Maximum Altitude: 81,000 ft. Rate of rise: 1450 ft/min to 81,000 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery; where? 4 Mi. NW Maiden Rock, Wisconsin when? 8 October 1952

Balloon Success: Excellent

Critique: Very good flight giving data on new balloon.

Scientific Purpose: Test of new balloon type.

Scientific Success as known: 100%

GENERAL MILLS, INC.
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Minneapolis, Minn.

FLIGHT REPORT FOR J-168 FLIGHTS

Flight No.: 808 Date: 8 October 1952

Launch Site: U of M Airport Launching Time: 1503.5

Balloon type: D-A Weight 3.6# Balloon Serial No.: J 8-241790

Who: NHL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Barograph, Sand, Chute

Load on Balloon: 10# Gross Load: 13.6#

Actual Free Lift: 13.2# 97% gross load.

Rate of Rise: 1420 ft/min to 98,000 ft. Maximum Altitude: 98,000 ft.

Actual duration: 2 hr. 8 min. to burst

Recovery: where? Wabasha, Minnesota

Method of tracking: None - (2/8 for telemetering only)

Scientific Purpose: Test of new balloon type.

Critique: Very good flight giving desired data.

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FLIGHT SUMMARY

Flight No.: 809 Date: 10 October 1952

Launch Site: U of M Airport Launching time: 1247

Balloon type: D-A Weight: 3.6# Balloon Serial No.: J 8-241750

Who: NRL Mastenbrook - Special Neoprene Balloon Test

What: Radiosonde, Baregraph, Sand, Chute

Load on Balloon: 10# Gross Load: 13.6#

Rate of Rise: 1441 ft/min to 82,000 ft. Actual Free Lift: 16.5# 121.3% gross load

Maximum Altitude: 82,000 ft. Actual Duration: 58 min. to burst.

Recovery: where? Otter Creek, Wisconsin when? 12 October 1952

Method of tracking: None - (R/S for telemetering only)

Scientific Purpose: Test of new balloon type.

Critique: Very good flight giving desired data.

Balloon

GENERAL MILLS, INC.
Aeronautical Research Laboratories

SHORT FLIGHT DATA SHEET

Flight: VS-1 - 352 Date: 9 Jan, 1951 Launching Time: 2300 MST

FOR A-168 Mastenbrook - Slow Riser

Balloon Mfgr. Dewey & Almy Type: NC-15.8-10T Quantity: 1
49471-3

Weight/Balloon 1551 grams. Total Balloon Weight: 3.42#

Equipment:	Type	Weight (lbs.)
1. Release Timer		
2. Parachute	R/S red	0.31
3. R/S & Battery		2.81
4. Ballast		1.88
	Total Equipment Weight	5.00
	Gross Weight	8.42

Desired Rate of Rise: particular rate of rise not desired

Desired Free Lift: 0.45 lb.

Gross Lift: 8.87 lb. or grams

Gross Lift/Balloon 8.87 lb. or grams

Rate of Rise 270 ft/min to 29,700 ft.

Ceiling Altitude:

Release Time:_____ Flight Duration: Unknown

Recovery: Where? 6¼ mi. S. New Boston, Texas

Recovery: When? 3-21-51, 1130

Reward: $_____ Paid to: _____

Critique:

R/S signal became unreadable before it could be determined if the balloon had leveled off or not. A successful weigh-off was accomplished under CAVU conditions.

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Mechanical Division
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Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 846 Balloon Serial No.: J350

Date: 19 June 1952 Launchint Time: 1650 Type: D-A Weight: 0.76#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Barograph, Parachute

Duration: 2 hr. 20 min. to burst Lead on Balloon: 4.47#

Gross Load: 5.2# Free Lift: 0.044# 0.84% gross lead

Maximum Altitude: 32,500 ft. Rate of Rise: 227 ft/min to 32,500 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-5-52

Balloon Success: Fair

Critique: Good test of balloon system. Not superior in performance.

Scientific Purpose: Slow Riser

Scientific Success as known:

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 858 Balloon Serial No.: 90739

Date: 15 July 1952 Launching Time: 1706 Type: D-A ML-131 Weight: 0.86#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Baro., Red Poly Streamer, chute

Duration: Unknown Load on Balloon: 4.7#

Gross Load: 5.56# Free Lift: 0.033# 0.6% gross load

Maximum Altitude: Unknown Rate of Rise: 131 ft/min to 23,900 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-5-52

Balloon Success: Good

Critique: Balloon showed excellent rate of rise, signal lost early

Scientific Purpose: Slow Riser

Scientific Success as known:

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Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 859 Balloon Serial No.: 90381

Date: 16 July 1952 Launching Time: 1944 Type: D-A ML-131 Weight: 0.71#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Baro., Red Poly Streamer, Parachute

Duration: Unknown Load on Balloon: 4.9#

Gross Load: 5.6# Free Lift: 0.033#, 0.6% gross load

Maximum Altitude: Unknown Rate of Rise: 106 ft/min to 1606 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-5-52

Balloon Success: Unknown

Critique: Test inconclusive, telemetering failure.

Scientific Purpose: Slow riser

Scientific Success as Known:

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Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 861 Balloon Serial No.: 90388

Date: 18 July 1952 Launching time: 1808 Type: D-A ML-131 Weight: 0.8#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Baro., Red Poly Streamer, Chute

Duration: 1 hr. to impact Load on Balloon: 4.7#

Gross Load: 5.5# Free Lift: 0.033# 0.6% gross load

Maximum Altitude: 4,300 ft. Rate of rise: 176 ft/min to 3,909 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 4 Mi. N. Scandia, Minn. when?

Balloon Success: Fair

Critique: Experiment successful, balloon performance poor but generally as expected.

Scientific Purpose: Slow Riser test

Scientific Success as known:

GENERAL MILLS, INC.
Engineering Research and Development Department
Mechanical Division
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 862 Balloon Serial No.: 90362

Date: 18 July 1952 Launching Time: 2106.9 Type: D-A ML-131 Weight: 0.7#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Barograph, Red Poly Streamer, Parachute

Duration: Unknown Load on Balloon: 4.6#

Gross Load: 5.3# Free Lift: 0.033# 0.62% gross load

Maximum Altitude: Unknown Rate of Rise: 58 ft/min to 14,000 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? None to 12-5-52

Balloon Success: Unknown

Critique: Success of experiment not definite, telemetering failed.

Scientific Purpose: Slow Riser

Scientific Success as Known:

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Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 863 Balloon Serial No.: 90385

Date: 21 July 1952 Launching time: 1310 Type: D-A ML-131 Weight: 0.7#

Who: NRL Mastenbrook - Slow riser

What: Radiosonde, Baro, Streamer, Chute

Duration: 2.6 hrs. to burst Load on Balloon: 4.7#

Gross Load: 5.4# Free Lift: 0.033# 0.6% gross load

Maximum Altitude: 53,700 Rate of Rise: 332 ft/min to 53,700 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? Ogema, Wisconsin

Balloon Success: Good

Critique: Balloon rose slowly to 53,700 ft, burst as expected.

Scientific Purpose: Slow Riser test.

Scientific Success as known:

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 864 Balloon Serial No.: 90399

Date: 21 July 1952 Launching Time: 1842.3 Type: D-A ML-131 Weight: 0.75#

Who: NRL Mastenbrook - Slow Riser

What: Radiosonde, Barograph, Red Poly Streamer, Parachute

Duration: 0.7 Hr. Load on Balloon: 4.7#

Gross Load: 5.5# Free Lift: 0.033# 0.6% gross load

Maximum Altitude: 2,158 ft. Rate of Rise: 91 ft/min to 2,158 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 5 1/2 Mi. NE Elk River, Minn.

Balloon Success: Fair

Critique: System test was good, but results not very good.

Scientific Purpose: Slow Riser

Scientific Success as Known:

Tracer
Balloon

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT

Flight No.: 685 — Date: 3-11-52

Launch site: U. Airport, Flt. Ctr. — Launching time: 2050 to 2204 C

Balloon type: D.A. NC30 — Serial No.:

Who: NRL - Mastenbrook - Tracer — Weight: 30 gm

What: Streamers, Reward Card — Load on Balloon: 40 gms.

Scheduled Duration: — Gross Load: 70 gms.

Actual Duration: — Free Lift: 8 gms. = 10.4% gross load

Maximum Altitude: — Altitude Maintenance:

Theoretical Altitude: — Rate of Rise:

Recovery: where? — when?

Balloon Success:

Scientific Purpose: Meterological tracers.

Scientific Success as Known: Good experiment

Critique: Reward cards Nos. 18-38 inc. Inflation total apparently too low to cover diffusion losses in lower levels, as some cards were found, with attached inflated balloon, within 100 miles of launching site.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT

Flight No.: 686 Date: 3-11-52

Launch site: U. Airport, Flt. Ctr. Serial No.:

Balloon type: D.A. N100 Launching time: 2212 to 2336C

Who: NRL-Mastenbrook - Traser Weight: 100 gms.

What: Streamers, Reward Cards Load on Balloon: 454 gms.

Scheduled duration: Gross Load: 554 gms.

Actual duration: Free Lift: 12 gms. = 2.2% gross load

Maximum Altitude: Rate of Rise:

Theoretical Altitude: Altitude Maintenance:

Recovery: where? when?

Balloon Success:

Scientific Purpose: Meteorological tracers.

Scientific Success as Known: Good experiment.

Critique: Reward cards Nos. 39-49 inc. Same comment on inflation as for Flt. 685.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT

Flight No.: 689 Date: 3-24-52

Launch site: U. Airport, Flt. Ctr. Serial No.:

Balloon type: D.A. Launching time: 1750 to 1912 C

Who: NRL - Mastenbrook - Tracer Weight: 30 gm.

What: Red Poly streamers & Reward tags

Scheduled duration: Load on balloon: 40 gms.

Actual duration: Gross load: 70 gms.

Maximum Altitude: Free Lift: 16 gms. = 22.9% gross load

Theoretical Altitude: Rate of Rise:

Altitude Maintenance:

Recovery: where? when?

Balloon success:

Scientific Purpose: Meterological tracers.

Scientific Success as Known:

Critique: 20 balloons launched, tag Nos. 60 thru 79.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota.

FLIGHT REPORT

Flight No.: 690 Date: 3-24-52

Launch Site: U. Arp't. Flt, Ctr. Launching time: 2048 to 2156 C

Balloon type: D.A. Serial No.:

Who: NRL-Mastenbrook - Tracer Weight: 100 gm.

What: Red Poly streamers & Reward tags.

Scheduled duration: Load on Balloon: 454 gms.

Actual duration: Gross Load: 554 gms.

Free Lift: 30 gms, 5.4% gross load Rate of Rise:

Maximum Altitude: Altitude Maintenance:

Theoretical Altitude:

Recovery: where? when?

Balloon Success:

Scientific Purpose: Meterological tracers.

Scientific Success as Known:

Critique: 9 balloons launched. Tag Nos. 51 thru 59.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT.

Flight No.: 698 | Date: 3-27-52

Launch site: U Airport | Launching time: 1752 to 2040C

Balloon type: D.A. N-100 | Serial No.: 80 thru 99 inclusive

Who: NRL - Mastenbrook - Tracer | Weight: app. 100 gm. each

What: Red Poly streamers & tags | Load on Balloon: 454 gms.

Scheduled duration: | Gross Load: 554 gms.

Actual duration: | Free Lift: 30 gms., 5.4$ gross load

Maximum Altitude: | Rate of Rise: unknown

Theoretical Altitude: | Altitude Maintenance:

Recovery: where? | when?

Balloon success:

Scientific Purpose: Test and develop constant level meteorological balloons.

Scientific Success as Known: Excellent launching. Other results not yet known.

Critique: Smooth operation. Upper wind directions seemed very desirable.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT

Flight No.: 699 — Date: 3-27-52

Launch site: U Airport — Launching time: 2206-2327C

Balloon type: D.A.-N-30 — Serial No.: 100 - 119 inclusive

Who: NRL - Mastenbrook - Tracer — Weight: app. 30 gm. each

What: Red poly streamers and tags — Load on Balloon: 40 gms.

Scheduled duration: — Gross load: 70 gms.

Actual duration: — Free lift: 16 gm. 23% gross load

Maximum altitude: — Rate of rise:

Theoretical altitude: — Altitude Maintenance:

Recovery: where? — when?

Balloon success:

Scientific Purpose: To test and develop constant level meterological sounding balloons.

Scientific Success as Known: Excellent launching. Other results not yet known.

Critique: Good operation. Winds at flight levels appeared to have correct direction for purposes of test.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 700 | Date: 4-7-52

Launch site: U Airport | Launch time: 1750 to 1957C

Balloon type: D.A. M-100 | Serial No.: 120-139 inclusive

Who: NRL - Mastenbrook - Tracer | Weight: 100 grams ea.

What: Red Poly streamers & tags | Load on Balloon: 454 grams.

Scheduled duration: | Gross Load: 554 grams.

Actual duration: | Free Lift: 30 grams, 5.4% gross load

Maximum Altitude: | Rate of Rise: unknown

Theoretical Altitude: | Altitude Maintenance:

Recovery: where? | when?

Balloon success:

Scientific Purpose: Test and develop constant level meteorological balloons.

Scientific Success as known:

Critique:

GENERAL MILLS, INC.
ENGINEERING RESEARCH AND DEVELOPMENT DEPARTMENT
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 811	Date: 4-7-52
Launch site: U Airport	Launch time: 2120 to 2215C
Balloon type: D.A. M-30	Serial No.: 140 to 159 inclusive
Who: NRL - Mastenbrook - Tracer	Weight: 30 grams ea.
What: Red Poly streamers & tags	Load on Balloon: 40 grams.
Gross Load: 70 grams.	Free Lift: 16 grams, 22.9% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 821 Date: 4-25-52

Launch site: U Airport Launch time: 1850 to 2033C

Balloon type: D.A. N-100 Serial No.: 160 to 179 inclusive

Who: NRL - Mastenbrook - Tracer Weight: 100 grams. ea.

What: Red Poly streamers & tags Load on Balloon: 454 grams.

Gross Load: 554 grams. Free Lift: 30 grams. 5.4% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 822	Date: 4-25-52
Launch site: U Airport	Launch time: 2149 to 2305C
Balloon type: D.A. N-30	Serial No.: 180 to 199 inclusive
Who: NRL - Mastenbrook - Tracer	Weight: 30 grams ea.
What: Red Poly streamers & tags	Load on Balloon: 40 grams.
Gross Load: 70 grams	Free Lift: 16 grams, 22.9% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 826	Date: 5-12-52
Launch site: U Airport	Launch time: 2104 to 2255C
Balloon type: D.A. N-100	Serial No.: 200 to 219 inclusive
Who: NRL - Mastenbrook - Tracer	Weight: 100 grams ea.
What: Red Poly streamers & tags	Load on Balloon: 454 grams.
Gross Load: 554 grams.	Free Lift: 40 grams, 7.2% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 827 Date: 5-12-52

Launch site: U Airport Launch time: 2322-0014C

Balloon type: D.A. N-30 Serial No.: 220 to 236 inclusive

Who: NRL - Mastenbrook - Tracer Weight: 30 grams ea.

What: Red Poly streamers & tags Load on Balloon: 40 grams.

Gross Load: 70 grams. Free Lift: 22 grams, 31.5% gross load

Scientific Purpose: Test and develop constant Level Meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 831	Date: 5-13-52
Launch site: U Airport	Launch time: 1909 to 2051C
Balloon type: D.A. N-100	Serial No.: 240 to 259 inclusive
Who: NRL - Mastenbrook - Tracer	Weight: 100 grams ea.
What: Red Poly streamers & tags	Load on Balloon: 454 grams.
Gross Load: 554 grams.	Free Lift: 40 grams. 7.2% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 742 — Date: 6-10-52

Launch site: U Airport — Launch time: 2106 to 2207C

Balloon type: D.A. N-100 — Serial No.: 270 to 278 inclusive & 308

Who: NRL - Mastenbrook - Tracer — Weight: 100 grams ea.

That: Red Poly streamers & tags, #308 carried 1# barograph — Load on Balloon: 454 grams

Scheduled duration: — Gross Load: 554 grams

Actual duration: — Free Lift: 30 grams, 5.4% gross load

Maximum altitude: — Rate of Rise: unknown

Theoretical Altitude: — Altitude Maintenance:

Recovery: where? — when?

Balloon success:

Scientific Purpose: Test and develop constant level meteorological balloons.

Scientific Success as known:

Critique:

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 743

Date: 6-10-52

Launch site: U Airport

Launch time: 2216 to 2312C

Balloon type: D.A. 18-100

Serial No.: 289 to 297 inclusive & 309

Who: NRL - Masterbrook - Tracer

Weight: 100 grams ea.

What: Red Poly ethecomers & tags, #309 carried 1# barograph

Load on Balloon: 454 grams

Scheduled duration:

Gross Load: 554 grams

Actual duration:

Free Lift: 40 grams, 7.2% gross load

Maximum altitude:

Rate of Rise: 860 ft/min to 16,900 ft.

Theoretical Altitude:

Altitude Maintenance:

Recovery: where?

when?

Balloon success:

Scientific Purpose: Test and develop constant level meteorological balloons.

Scientific success as known:

Critique:

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Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 7[illegible]4 Date: 6-10-52

Launch site: U Airport Launch time: 2100 to 21520

Balloon type: D.A. M-100 Serial No.: 260 to 269 inclusive

Who: NML - Masterbrook - Tracer Weight: 100 grams ea.

What: Red Poly streamers & tags Load on Balloon: 454 grams

Gross Load: 554 grams Free Lift: 25 grams. 4.5% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 745 Date: 6-10-52

Launch site: U Airport Launch time: 2203 to 2300 C

Balloon type: D.A. N-100 Serial No.: 279 to 288 inclusive

Who: NRL - Mastenbrook - Tracer Weight 100 grams ea.

What: Red Poly streamers & tags Load on Balloon: 454 grams

Gross Load: 554 grams. Free Lift: 35 grams, 6.3% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 746 Date: 6-10-52

Launch site: U Airport Launch time: 2310 to 23570

Balloon type: D.A. H-100 Serial No.: 298 to 307 inclusive

Who: NRL - Masterbrook - Tracer Weight: 100 grams ea.

What: Red Poly streamers & tags Load on Balloons 454 grams.

Gross Load: 554 grams. Free Lift: 45 grams, 8.1% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 850A

Date: 7-8-52

Launch site: U Airport

Launch time: 2108-2314C

Balloon type: D.A. N-100

Serial No.: 310 to 329 inclusive & 370

Who: NRL - Mastenbrook - Tracer

Weight: 100 grams ea.

What: Red Poly streamers & tags, #370 carried 1# barograph

Load on Balloon: 454 grams.

Gross Load: 554 grams.

Free Lift: 30 grams, 5.4% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 850B — Date 7-8-52

Launch site: U Airport — Launch time: 2108 to 24120

Balloon type: D.A. N-100 — Serial No.: 330 to 349 inclusive & 371

Who: NRL - Mastenbrook - Tracer — Weight: 100 grams ea.

What: Red Poly streamers & tags, #371 carried 1# barograph — Load on Balloon: 454 grams.

Gross Load: 554 grams. — Free Lift: 35 grams, 6.3% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 8500 Date 7-9-52

Launch site: U Airport Launch time: 00130

Balloon type: D.A. N-100 Serial No.: 372

Who: NRL - Masterbrook - Tracer Weight 100 grams

What: Red Poly streamer, tags, barograph Load on balloon: 454 grams.

Gross Load: 554 grams. Free Lift: 40 grams, 7.2% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 867 Date: 7-23-52

Launch site: U Airport Launch time: 2047 to 2334C

Balloon type: D.A. N-100 Serial No.: 350 to 369 inclusive

Who: NHL - Mastenbrook - Tracer Weight: 100 grams ea.

What: Red Poly streamers and tags Load on Balloon: 454 grams.

Gross Load: 554 grams. Free Lift: 35 grams, 6.3% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 868 Date: 7-23-52

Launch site: U Airport Launch time: 2043 to 2249 C

Balloon type: D.A. N-100 Serial No.: 370 to 389 inclusive

Who: NRL - Mastenbrook - Tracer Weight: 100 grams ea.

What: Red Poly streamers and tags Load on Balloon: 454 grams.

Gross Load: 554 grams. Free Lift: 46 grams, 8.3% gross load

Scientific Purpose: Test and develop constant level meteorological balloons.

Neoprene Carrier
Balloon

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 328 Date: 12-18-50

Launch site: U Airport Launch time: 1750Z

Balloon type: NC-18.5-10T Serial No.: 49471-2

Who: NRL - Mastenbrook - Neoprene Carrier

What: 40 mc. beacon Weight: 3.5#

Load on Balloon: 8.62# Gross Load: 12.12#

Free Lift: 1.0#, 11.6% gross load Rate of Rise: 569 fr/min to 16,500 ft.

Maximum Altitude: 19,300 ft. Recovery: Wheeler, Wisc.

Critique: Inflated in hangar, scattered clouds 3-5thousand, temp approx. 15°F. Wind, light SE, valve setting 3.0", orifice 0.625".

Scientific Purpose: Evaluation of constant Level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 329 Date: 12-18-50

Launch site: U Airport Launch time: 2040C

Balloon type: NC-18.5-10T Serial No.: 49471-4

Who: NRL - Mastenbrook - Neoprene Carrier

What: 40 mc. beacon Weight: 3.49#

Load on Balloon: 12.85# Gross Load: 16.34#

Free Lift: 2.0#, 12.2% gross load Rate of Rise: 569 ft/min to 19,100 ft.

Maximum Altitude: 23,500 ft. Recovery: Osceola, Wis., 12-20-50

Critique: Inflated in hangar, light snow, wind SE, temp. approx. 15°F.
Valve setting 3.5", orifice 0.625".

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 330 Date: 12-19-50

Launch site: U Airport Launch time: 1618.88

Balloon type: NC-24-10T Serial No.: D.A.

Who: NRL - Mastenbrook - Neoprene Carrier

What: 40 mc beacon, barograph (NRL) Weight: 6.68#

Load on Balloon: 41.0# Gross Load: 27.68#

Free Lift: 5.0#, 18.1% gross load Rate of Rise: 575 ft/min to 19800 ft.

Maximum Altitude: 22,300 ft Recovery: Albion, Ill.

Critique: CAVU, calm, 10°F, valve setting 2.8", orifice 1.38".
Launched before sunset, no signal lite was flown.

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 331 Date: 12-19-50

Launch site: U Airport Launch time: 2023.10

Balloon type: NC-24-10T Serial No.: D.A.

Who: NRL - Mastenbrook - Neoprene Carrier

What: 40 mc beacon, barograph (NRL)

Weight: 6.02# Load on Balloon: 21.00#

Gross Load: 27.02# Free Lift: 6.0#, 22.2% gross load

Recovery: Postville, Iq, 4 mi. E., 1615, 12-20-50.

Crituque: CAVU, calm, 9°F, transmitter failed on take-off, no telemetering during flight. Valve setting 4.5", orifice 1.38". Barograph illegible on return. No data.

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 332 Date: 12-19-50

Launch site: U Airport Launch time: 2200.30

Balloon type: NC-24-10T Serial No.: D.A.

Who: NRL - Mastenbrook - Neoprene Carrier

What: 40 mc beacon Load on Balloon: 21.0#

Weight: 6.83# Gross Load: 27.83#

Free Lift: 6.0#, 21.5% gross load Rate of Rise: 1083 ft/min to 25,700 ft

Recovery: Hammond, Ill., 0530, 12-20-50

Maximum Altitude: 27,500 ft.

Critique: CAVU, 6°F, calm, valve setting 4.5", orifice 1.38".

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 333 Date: 12-20-50

Launch site: U Airport Launch time: 1644G

Balloon type: NC-24-10T Serial No.: 49468-1 D.A.

Who: NRL - Mastenbrook - Neoprene Carrier

What: 1746 kc beacon Load on Balloon: 22.09#

Weight: 6.8# Gross Load: 28.89#

Free Lift: 6.0#, 20.8% gross load Rate of Rise: 807 ft/min to 28800 ft

Maximum Altitude: 31,500 ft.

Critique: 4000' broken, 15°F, wind SSE light 0-5, valve setting 5.0", orifice diameter 0.95"

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 33¾ Date: 12-20-50

Launch site: U Airport Launch time: 1858

Balloon type: NC-26-10T Serial No.: 49470-4

Who: NRL - Masterbrook - Neoprene Carrier

What: Barographs and beacon (40mc) Load on Balloon: 41.0#

Weight: 9.14# Gross Load: 30.14#

Free Lift: 10.0#, 19.9% gross load Rate of Rise: 1226 ft/min to 29100 ft

Recovery: 6 mi SW Carey, Ohio, 0600 12-21-50

Critique: 4000' broken, 10°F, wind SSE 5-10 mph, valve setting 3.6", orifice diameter 1.17"

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 336 Date: 12-21-50

Launch site: U Airport Launch time: 1832C

Balloon type: NC-26-1CT Serial No.: 49470-1

Who: NRL - Masterbrook - Neoprene Carrier

What: Barographs, 1746 kc. beacon

Weight: 8.53# Load on Balloon: 41.0#

Gross Load: 49.53# Free Lift: 11.7#, 24.0% gross load

Rate of Rise: 1199 ft/min to 29200 ft

Critique: Valve setting 4.3", orifice diameter 0.95"

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 337 Date: 12-21-50

Launch site: U Airport Launch time: 2223G

Balloon type: NC-28-10T Serial No.: 49470-3

Who: NRL - Mastenbrook - Neoprene Carrier

What: Barograph, I.P. barograph, 40 mc. beacon, ballast

Weight: 8.59# Load on Balloon: 41.0#

Gross Load: 49.59# Free Lift: 10.0#, 20.2% gross load

Rate of Rise: 806 ft/min to 4700 ft Recovery: Indianapolis, Ind, morning of 12-22-50

Critique: Valve setting 3.7", orifice diameter 1.17"

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 338 Date: 12-22-50

Launch site: U Airport Launch time: 1841C

Balloon type: NC-26-10T Serial No.: 49470-5

Who: NRL - Mastenbrook, Neoprene Carrier

What: Barograph (NRL), I.P. barograph, 1746 beacon, ballast

Weight: 8.69# Load on Balloon: 41.0#

Gross Load: 49.69# Free Lift: 10.0#, 20.1% gross load

Rate of Rise: 1109 ft/min to 26500 ft

Critique: Valve setting 3.6", orifice diameter 1.17", data unreliable beyond 2007

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Engineering Research and Development Department
Minneapolis, Minn.

FLIGHT SUMMARY

Flight No.: 339 Date: 12-22-50

Launch site: U Airport Launch Time: 2200C

Balloon type: NC-28-10T Serial No.: 49470-6

Who: NRL - Mastenbrook - Neoprene Carrier

What: Valve, chute, barograph, I.P. barograph, ballast, signal lite.

Weight: 8.73# Load on Balloon: 41#

Gross Load: 49.73# Free Lift: 8.0#, 16.1% gross load

Rate of Rise: 933 ft/min to 28500 ft Recovery: 24 mi. NE Dayton, Ohio, 0735 12-23-50

Critique: Valve setting 3.4", orifice diameter 1.38", sunrise on balloon approximately 0645C.

Scientific Purpose: Evaluation of constant level balloon system.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 421 Date: 3-9-51

Launch Site: U of M Airport Launching time: 2101

Balloon type: D & A Serial No: 54071-7

Who: A-168 N.R.L. Mastenbrook Weight: 32.0
Neoprene Carrier

What: Barograph #6, Beacon, signal lite, ballast

Actual duration: 1.22 hrs. Load on Balloon: 32#

Free lift: 6# 14.5% gross load. Maximum altitude: 37,800 ft.

Rate of rise: 760 ft/min to 37,700 feet

Recovery: where? 4432-2nd St. N. E. Mpls, Minn. when? 4-10-51

Scientific Success as known: Poor

Critique: Good inflation and launching. Telemetering failed after take off. Balloon rose normally for 0.8 hrs. and then descended. Helium was used.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 420 **Date:** 4-9-51

Launch site: U of M Airport **Launching time:** 1924

Balloon type: D & A **Serial No.:** 54071-2

Who: A-168 N.R.L. Mastenbrook **Weight:** 32.6

What: Neoprene Carrier Barograph, Beacon, Ballast, signal lite.

Actual duration: 0.88 hrs. **Load on Balloon:** 33#

Maximum altitude: 30,000 feet. **Free lift:** 6# 14.6% gross load

Rate of rise: 1022 ft/min to 29,600 ft.

Forecast Impact: West Central Iowa

Recovery: where? 5919 Dupont Ave. N. Mpls., 12, Minn. when? 4-10-51

Scientific Success Known: Poor

Critique: Balloon rose rapidly to 30,000 ft. and then burst. Launching was good but telemetering failed at takeoff. Helium used.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 422 **Date:** 4-11-51

Launch site: U of M Airport **Launching time:** 1921.5

Balloon type: D & A **Serial No.:** 5407

Who: A-168 M.R.L. Mastenbrook **Weight:** 31.6 lbs.
Neoprene Carrier

What: Valve, Barograph #4, Beacon, Signal lite, Ballast

Actual Duration: 0.5 hrs. **Free lift:** 5# 12.2% gross load

Rate of rise: 715 ft/min to 22,000 feet.

Maximum altitude: 20,250 ft. **Forecast Impact:** Northwestern N. Dak.

Recovery: where? 1/2 Mi. W. Loretto, Minn.

Scientific Purpose: Poor

Critique: 2.8" H_2O Int. Pressure Valve setting.
No acetate used in the valve
Good inflation with H_2.
Good launching.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 423 Date: 4-11-51

Launch Site: U of M Airport Launching time: 2054

Balloon type: D & A Serial No.: 54071-5

Who: A-168 N.R.L. Mastenbrook Weight: 37.2 lbs.
Neoprene Carrier

What: Barograph, Beacon, Signal lite, Ballast

Scheduled Duration: 10 hrs. Maximum altitude: 22,900 ft.

Free lift: 6.0# 13.1% gross load Forecast Impact: Northwestern N. Dak.

Rate of rise: 526 ft/min to 22,000 ft.

Recovery: where? 10 Mi. S Marion, S. Dak.

Scientific Success as known: Poor

Critique: 2.9" H_2O Int. Pressure valve setting H_2 used

Good inflation and launching.

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Minneapolis, Minnesota

Flight Report

Flight No.: 426 Date: 4-12-51

Launch site: U of M Airport Launching time: 2142.2

Balloon type: D & A Serial No.: 54071-9

Who: A-168 N.R.L. Madtenbrook Weight: 41 lbs.
Neoprene Carrier

What: Valve Barograph #7, Beacon, Signal lite, Ballast

Actual duration: 0.5 hrs. Load on Balloon: 41 lbs.

Maximum altitude: 32,300 ft. Free lift: 8# 16.4% gross load

Rate of Rise: 1153 ft/min to 32,300 ft.

Recovery: where? Sec. 17, Denmark, Twp. Wash, County, Minn.

Scientific Success as known: Poor

Critique: 3.2" H_2O Int. Pressure Valve Setting H_2 used
Good inflation and launching.

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FLIGHT REPORT

Flight No.: 424 Date: 4-13-51

Launch site: U of M Airport Launching time: 1838

Balloon type: D & A Serial No.: 54071-21

Who: A-168 N.R.L. Mastenbrook Weight: 460
Neoprene Carrier

What: Barograph #7, Beacon, Signal lite, Ballast

Actual duration: 0.8 hrs. Load on Balloon: 41#

Free lift: 7.0# 14.2% gross load Maximum altitude: 11,200 ft.

Rate of rise: 198 ft/min to 11,193 ft.

Forecast Impace: Central, Mississippi

Recovery: where? 7 Mi. S.E. Hastings, Minn. when? 4-13-51

Scientific Success as Known: Poor

Critique: 3.3" H_2O Int. pressure valve setting H_2 used
Good inflation & launching.

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FLIGHT REPORT

Flight No.: 425 **Date:** 4-13-51

Launch Site: U of M Airport **Launching time:** 2024

Balloon type: D & A **Serial No.:** 54071-4

Who: A-168 N.R.L. Mastenbrook **Weight:** 41.0

What: Barograph #10, Beacon, Signal lite, Ballast, Chute
Neoprene Carrier

Actual duration 0.5 hrs. **Load on Balloon:** 41.0#

Free lift: 8.0 lbs. 16.3% gross load.

Rate of rise: 1010 ft/min to 30,600 feet.

Recovery: where? 3 Mi. N. Hastings, Minnesota when? 4-14-51

Scientific Success as Known: Poor

Critique: 3.6" H_2O Int. Pressure valve setting H_2 used.
Good inflation and launching.

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FLIGHT REPORT

Flight No.: 427 **Date:** 4-13-51

Launch Site: U of M Airport **Launching time:** 2305

Balloon type: D & A **Serial No.:** 24071-10

Who: A-168 N.R.L. Mastenbrook **Weight:** 460 lbs.
Neoprene Carrier

What: Barograph #1, Beacon, Signal lite, Ballst

Actual Duration: 0.5 hrs. **Load on Balloon:** 41 #.

Free lift: 7# 14.4% gross load. **Maximum altitude:** 35,800 ft.

Rate of Rise: 1125 ft/min to 35,800 feet.

Recovery: where? 3 Mi. S. Afton, Minn. when? 4-30-51

Scientific Success as known: Poor

Critique: 2.9" H_2O Int. Pressure Valve Setting H_2 used
Good inflation and launching.

GENERAL MILLS, INC.
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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 428 Date: 4-14-51

Launch site: U of M Airport Launching time: 0034

Balloon type: D & A Serial No.: 5,4071-8

Who: A-168 N.R.L. Mastenbrook Weight: 41.0 lbs.

What: Barograph #2, Neoprene Carrier Beacon, Signal lite, ballast valve

Actual Duration: 2.7 hrs. Load on Balloon: 41 lbs.

Free lift: 7# 14.3% gross load.

Rate of Rise: 1170 ft/min to 31,000 ft.

Recovery: where? 10 Mi. N.E. Lacrosse, Wisconsin when? 5-1-51

Forecast Impace: Central Mississippi

Scientific Purpose: Poor

Critique: 27" H_2O Int. Pressure Valve Setting H_2 used.
Good inflation and launching.

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Aeronautical Research Laboratories
Minneapolis, Minn.

FLIGHT REPORT

Flight No: 429 **Date:** 4-14-51

Launch Site: U of M. Airport **Launching time:** 0105

Balloon type: D & A **Serial No.:** 54071-6

Who: A-168 N.R.L. Mastenbrook **Weight:** 41.0 lbs.
Neoprene Carrier

What: Valve Barograph #5, Beacon, Signal lite, Ballast

Actual Duration: 0.7 **Load on Balloon:** 41#

Free lift: 7.00# 13.9% gross load

Maximum altitude: 32,000 ft. **Rate of rise:** 900 ft/min to 27,800 ft.

Recovery: where? 5 Mi. N.E. Pepin, Wis.

Scientific Success as Known: Poor

Critique: 2.9" H_2O int. Pressure Valve Setting H_2 used.
Good inflation and launching.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 466 **Date:** 4 June 1951

Launch site: U/M Airport **Launching time:** 2048

Balloon type: Dewey & Almy **Serial No.:** 54071-2 **Weight:** 8#

Who: NRL Mastenbrook (168)
Neoprene Carrier
What: Beacon, barograph

Scheduled duration:
Actual duration: .7 hrs. **Load on balloon:** 34#

Gross load: 40# **Free lift:** 7# 18% gross load

Max. Altitude: 35,100 ft. **Rate of rise:** 855 ft/min to 35,100 ft.

Theoretical Alt.: Not applicable **Alt. maintenance:** none

Recovery: where? 5 mi. E. Deer Park, Wisconsin
when? 5 June 1951

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

Balloon did not level off. It is assumed that the water in the NRL liquid head internal pressure valve froze before the balloon had completed "valving".

Critique:

The valve setting was rather high (2.4" H_2O) and temperature of the liquid was at 27°C at launching. The valve liquid was not preheated.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 469 Balloon Serial No.: 54071-29

Date: 5 June 1951 Launching Time: 2239 Type: Dewey & Almy Weight: 8#

Who: NRL Mastenbrook - Neoprene Carrier

What: Beacon, barograph, valve, altitude limit switch and signal, ballast.

Duration: 0.65 hr. to burst Load on Balloon: 32#

Gross Load: 40# Free Lift: 9# 22% of gross load.

Maximum Altitude: 40,400 ft. Rate of rise: 1010 ft/min to 40,400 ft.

Theoretical Alt.: Not applicalbe Alt. Maintenance: None

Recovery: where? Hudson, Wisconsin
when? 7 June 1951

Balloon Success: No

Critique:

Water was used in the pressure relief valve. It is assumed that the liquid froze before valving took place. The internal pressure increased to the breaking point of the balloon. As a result of these and other tests, this type of "self-sealing valve" has been discontined.

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as known:

The balloon burst rather than levelling off and floating at a constant level.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 471 Date: 6-5-51

Launch site: U/M Airport Launching time: 1945

Balloon type: Dewey & Almy Serial No.: 54071-32 Weight: 8.95#

Who: 168 NRL - Mastenbrook - Neoprene Carrier

What: Valve, barograph, beacon

Scheduled duration:

Load on balloon: 31.05#

Actual duration: 12 hrs.

Gross load: 40.00# Free lift: 8.8# 22 % gross load.

Maximum altitude: 34,500 ft. Rate of rise: 940 ft/min to 32,800 feet.

Theoretical altitude: not applicable Altitude maintenance: very good

Recovery: where? Drayton, Ontario
when? 6-6-51

Balloon success: Yes

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

A very successful flight. The balloon floated at a constant altitude all night and upon sunrise ascended to a bursting altitude terminating the flight.

Critique:

Internal pressure setting 2.0" water.
2 ethyl hexyl acetate was used as the valve fluid.
Balloon was preheated 5 minutes at 60°C. No valve preheat was used.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 472 **Date:** 6/6/51

Launch Site: U/M Airport **Launching time:** 0012C

Balloon type: Dewey & Almy **Serial No.:** 54071-24 **Weight:** 8.44

Who: 168 NRL - Mastenbrook - **Neoprene Carrier**

What: Rubber balloon, pressure valve, parachute, ballast, beacon, and barograph

Scheduled duration:
Actual duration: 2.6 hrs. to impact **Load on balloon:** 32#

Gross load: 40# **Free lift:** 9# 22% gross load.

Maximum altitude: 38,300 ft. **Rate of rise:** 1060 ft/min to 36,000 ft.
Theoretical Alt.: Not applicable **Altitude Maintenance:** Poor

Recovery: where? 2 1/2 mi. WSW Whitehall, Wisconsin
when? 6/6/51

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Succes as Known:

Balloon did not level off but rather started to descend believed due to a channel being frozen in the valve liquid allowing the the gas to leak out of the system.

Critique:

Valve setting 1.7 in. water. Water was used as valve liquid at 74°C. Balloon was preheated four minutes at 60°C.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 474 **Balloon Serial No.:** 54071-27

Date: 6-6-51 **Launch time:** 2026 **Type:** Dewey & Almy **Weight:** 8.93#

Who: NRL - Mastenbrook • Neoprene Carrier

What: Dry ice, beacon, barograph #4

Duration: 10.5 hrs. **Load on balloon:** 31.07#

Gross load: 40.00# **Free lift:** 8.8# 22% gross load

Maximum altitude: 34,190 ft. **Rate of rise:** 1055 ft/min to 33,500 ft.

Theoretical altitude: Not applicable **Altitude maintenance:** Good

Recovery: where? 4 mi. N of Harrow, Ontario
when? 1000 E.S.T. - 6-7-51

Balloon success: Yes

Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success:

A very successful flight. The balloon floated at a constant altitude all night and upon sunrise ascended to a bursting altitude terminating the flight.

Critique:

Internal pressure valve setting 1.7 in. water.
2 Ethyl hexyl acetate was used.
No preheat was used on the valve liquid.
Balloon was preheated 4 minutes at 60°C.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 475 **Date:** 6 June 1951

Launch site: U/M Airport **Launching time:** 2313.2

Balloon type: Dewey & Almy **Serial no.:** 54071-16 **Weight:** 8.09#

Who: NRL Mastenbrook - Neoprene Carrier

What: Timer, parachute and safety chute, valve, barograph III, light, beacon, sand ballast.

Scheduled duration:

Load on balloon: 30.23#

Actual duration: Est. 6.9 hrs.

Gross load: 39.16# **Free lift:** 10# 25% gross load.

Maximum known altitude: 35,900 ft. **Rate of rise:** 1130 ft/min to 29,200 ft.

Theoretical altitude: Not applicable **Altitude maintenance:** good

Recovery: where? 5 mi. NW of Lowell, Michigan
when? 1030 AM, 7 June 1951

Balloon success: yes

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Flight was satisfactory. Altitude was evidently maintained until sunrise when balloon ascended to bursting altitude.

Critique:

Internal pressure valve setting 1.8 in. water.
2 ethyl hexyl acetate was used as valve liquid with no preheating.
Balloon was preheated four minutes at 60°C.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 476 **Date:** 6-7-51

Launch site: U/M Airport **Launching time:** 0056.5

Balloon type: Dewey & Almy **Serial No.:** 54071-17 **Weight:** 8#

Who: NRL Mastenbrook - Neoprene Carrier

What: Barograph III, Beacon, Valve

Scheduled duration:
Actual duration: .64 hr. to burst **Load on balloon:** 32#

Gross load: 40# **Free lift:** 9# 22% gross load.

Maximum altitude: 39,900 feet **Rate of rise:** 1040 ft/min to 37,900 ft.

Theoretical altitude: not applicable **Altitude maintenance:** not applicable

Recovery: where? (valve) 2 mi. W Marine, Minnesota
when? 6-9-51

Balloon success: No

Scientific Purpose:

Evaluation of constant level balloon systems.

Scientific Success as Known:

Balloon burst before leveling off.

Critique:

Internal pressure valve setting 1.7 in H_2O, 1.4 of H_2O and 0.3 of 2 ethyl hexyl acetate.
Balloon was preheated four minutes at 60°C.
Valve temperature at launching 50°C.
Internal pressure was evidently too high.

GENERAL MILLS, INC.
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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 480 Date: June 7, 1951

Launch site: U/M Airport Launching time: 2120

Balloon type: Dewey & Almy Serial No.: 54071-28 Weight: 9#

Who: NRL Mastenbrook - Neoprene Carrier

What: Barograph, beacon

Scheduled duration:

Load on balloon: 31#

Actual duration: 1.15 hrs.

Gross load: 40# Free lift: 9# 22% gross load

Maximum altitude: 36,200 feet Rate of rise: 1050 ft/min to 36,200 ft.

Theoretical altitude: not applicable Altitude maintenance: not applicable

Recovery: where? 3 mi. NW Scandia, Minnesota
when? 11 June 1951

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

Balloon did not level off. It is assumed that the water froze in the valve before valving was completed.

Critique:

Water and 2 Ethyl Hexyl Acetate were used experimentally but unsuccessfully in the NRL liquid head internal pressure valve. Minimum altitude switch released instrument load from the descending parachute.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 481 **Date:** 8 June 1951

Launch site: U/M Airport **Launching time:** 1538C

Balloon type: Dewey & Almy **Serial No.:** 54071- ? **Weight:** 8.94#

Who: NRL Mastenbrook • Neoprene Carrier

What: Beacon, Barograph, Internal Pressure Valve

Scheduled duration:
Actual duration: to burst 1.3 hrs. **Load on balloon:** 46#

Gross load: 55.00# **Free lift:** 6# 11% gross load.

Maximum altitude: 66,100 ft. **Rate of rise:** 970 ft/min to 38,750 ft.

Theoretical altitude: none **Altitude maintenance:** none

Recovery: where? 12 mi. E. Baldwin Lake, Wisconsin
when? 1725 - June 8, 1951

Balloon success: no

Scientific Purpose:

To evaluate constant level balloon systems.

Scientific Success as Known:

Balloon burst rather than leveling off at a floating altitude.

Critique:

Valve setting 1.2 in. H_2O of 2 Ethyl Hexyl Acetate.
Balloon preheated four minutes at 60°C.

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Minneapolis, Minnesota.

FLIGHT REPORT

Flight No.: 492 **Date:** 12 June 1951

Launch site: U/M Airport **Launching time:** 1958

Balloon type: Dewey & Almy **Serial No.:** 54071-11

Who: NRL Mastenbrook - Neoprene Carrier

What: Beacon, Barograph, Internal Pressure Valve

Actual Duration: 1.6 hrs. **Load on balloon:** 32#

Gross load: 40# **Free lift:** 8.8# 22% gross load

Maximum altitude: 33,600 ft. **Rate of rise:** 1100 ft/min to 32,000 ft.

Recovery: where? None as of 7/15/51

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

It is assumed that a leak in the valve system probably due to a path or leak being formed in the system when the kerosene froze, caused the balloon to level off and start to descend. The balloon did not break.

Critique:

Valve setting 1.7" H_2O of kerosene.
Balloon perheated four minutes at 60°C.
Balloon had been preheated the same treatment four days prior to the flight.

GENERAL MILLS, INC.
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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 539 Date: 8/6/51

Launch Site: U. of M. Airport Launching Time: 1915 C

Balloon Type: D and A Serial No.: Weight: 9

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Barograph, valve, ballast

Scheduled duration: Not applicable Hrs. Load on balloon: 36 #

Actual duration: unknown Hrs.

Gross load: 45 # Free lift: 18# 40% gross load.

Maximum altitude: unknown ft. Rate of rise: unknown ft/min to --- ft.

Theoretical Altitude: not applicable Altitude maintenance: unknown

Recovery: where? not recovered to date 9/14/51

Balloon success: unknown

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Telemetered data missing. This was one of three simultaneous launchings (539, 540 and 541). Data dependent upon recovery.

Critique:

Balloon preheated 3 min. @ 64° C

Valve setting 1.7" H_2O 2 ethyl hexyl acetate was used as valve liquid.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 540 Date: 6 August 1951

Launch Site: U. of M. Launching time: 1915 C

Balloon type: D and A Serial No.: --- Weight: 9

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Barograph, Dry Ice Ballast

Scheduled duration: Load on balloon: 36#

Actual duration: 0.5 hrs.

Gross Load: 45 # Free lift: 18# 40% gross load

Maximum altitude: 38,750 ft. Rate of rise: 1400 ft/min to 38,750 ft.

Theoretical Altitude: --- Altitude maintenance:

Recovery: where? 7½ S.W. Baldwin, Wis. when? 8/7/51

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

Excessive free lift caused balloon failure. There was not sufficient time for valving of excess gas.

Critique:

Balloon preheated 3 min. @ 60° C.

Valve setting 1.7" H_2O, 2 ethyl hexyl acetate was used for valve liquid.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 541 Date: 6 August 1951

Launch Site: U. of M. Airport Launching Time: 1915 C

Balloon Type: Dewey & Almy Serial No.: Weitht: 9#

Who: J-166 NRL Mastenbrook - Neoprene Carrier

What: Barograph, Sand, Dry Ice Ballast

Scheduled duration:

Load on balloon: 36 #

Actual Duration: 0.7 hrs.

Gross load: 45 lbs. Free lift: 18# 40% gross load.

Maximum Altitude: 45,400 ft. Rate of rise: 1080 ft/min to 42,500 ft.

Theoretical Altitude: ---- Altitude maintenance: ----

Recovery: where? 1½ NW Spring Valley, Wis. when? 7 August

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon systems.

Scientific Success as Known:

Balloon did not level off. Failure believed due to excessive free lift. Orifice was not large enough to complete valving.

Critique:

2 Ethyl Hexyl Acetate was used as the liquid in the internal pressure relief valve. The new quick attachable valve was used.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 543 Date: 8 August 1951

Launch Site: U. of M. Airport Launching time: 2008

Balloon type: D and A Serial No.: no data Weight: 9

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Beacon, Barograph, Dry Ice Ballast

Scheduled duration: Load on balloon: 37#

Actual duration: Unknown

Gross load: 45# Free lift: 6# 13% gross load.
1380 22,600

Maximum altitude: 35,400 ft. Rate of rise: 690 ft/min to 34,200 ft.

Theoretical altitude: not applicable Altitude maintenance: unknown

Recovery: where? not recovered to date when? 9/14/51

Balloon success:

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Balloon appeared to level off satisfactorily. Telemetering signal faded after approximately 15 minutes of flight.

Critique:

Dry ice ballast used.

Valve setting 1.5" H_2O. 2 ethyl hexyl acetate used as valve liquid with no preheat. Balloon was preheated 3 minutes at 140° F.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 544 Date: 8 August 1951

Launch site: U. of M. Airport Launching Time: 2008

Balloon type: D and A Weight: 8.3

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Barograph, valve and dry ice ballast

Scheduled duration: not applicable Load on balloon: 37#

Actual duration: unknown

Gross load: 45# Free lift: 6# 13% gross load

Maximum altitude: unknown Rate of rise: unknown ft/min to ---ft.

Theoretical Altitude: unknown Altitude maintenance: unknown

Recovery: where? none (9/25/51) when? ---

Balloon success: unknown

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Unknown balloon was flown with no telemetering with #543. Data is dependent upon recovery.

Critique:

Valve setting 1.5" H_2O. 2 ethyl hexyl acetate was used as valve liquid. Balloon preheated 3 minutes at 140° F.

GENERAL MILLS, INC.
Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 547 Date: August 10, 1951

Launch site: U. of Minn. Launching time: 1934

Balloon type: D and A Weight: 8

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Beacon, Barograph, Dry Ice Ballast

Scheduled duration: not applicable Load on balloon: 37#

Actual duration: unknown

Gross load: 45 # Free lift: 6# 13% gross load

Maximum altitude: 35,100 ft. Rate of rise: 1120 ft/min to 28,700 ft.

Theoretical Altitude: not applicable Altitude maintenance: unknown

Recovery: where? not recovered to date when? 9/14/51

Balloon success: unknown

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Telemetering failed before it could be determined if the balloon leveled off or not.

Critique:

Balloon preheated 4 minutes @ 140° F.

Valve setting 1.7" H_2O, 2 ethyl hexyl acetate used.

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Aeronautical Research Laboratories
Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 548 Date: 14 August 1951

Launch Site: U. of Minn. Airport Launching time: 1955 C

Balloon type: D and A Serial No.: NC 56511-4 Weight: 8#

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Barograph, Beacon, Dry Ice Ballast

Scheduled duration: not applicable Load on balloon: 65#

Actual duration: unknown

Gross Load: 73# Free lift: 3# 3% gross load

Maximum altitude: 30,800 ft. Rate of rise: 675 ft/min to 29,200 ft.

Theoretical Altitude: not applicable Altitude maintenance: unknown

Recovery: where? not recovered to date when? ---

Balloon success: No

Scientific Purpose:

Evaluation of constant level rubber balloon system and evaluation of feasability of heavy loads.

Scientific Success as Known:

Balloon stopped ascending but did not level off, rather it began descending slowly immediately upon reaching maximum altitude.

Critique:

Balloon preheat 3 minutes at 140° F.

Valve setting 1.7" H_2O

2 Ethyl Hexyl acetate used as liquid bead with no preheat.

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Minneapolis, Minnesota

FLIGHT REPORT

Flight No.: 549 Date: 14 August 1951

Launch site: U. of M. Airport Launching time: 2136 C

Balloon type: D and A Serial No.: EC 47065-17 Weight: 6

Who: J-168 NRL Mastenbrook - Neoprene Carrier

What: Barograph, Beacon, Dry Ice Ballast

Scheduled duration: ---- Load on balloon: 34#

Actual duration: Unknown

Gross load: 40 # Free lift: 7# 18% gross load

Maximum altitude: 36,400 ft. Rate of rise: 1170 ft/min to 36,250 ft.

Theoretical altitude: not applicable Altitude maintenance: unknown

Recovery: where? not recovered to date when? 9/14/51

Balloon success: unknown

Scientific Purpose:

Evaluation of constant level rubber balloon system.

Scientific Success as Known:

Balloon appeared to level off satisfactorily. Telemetering faded out after approximately 15 minutes of level flight.

Critique:

Balloon preheat 3 minutes @ 140° F. Valve setting 1.1" H_2O, 2 Ethyl hexyl acetate used as valve liquid no preheat.

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 901 Balloon Serial No.: 47065-3

Date: 15 Sept. 1952 Launching Time: 2049.7 Type: D-A N-28 Weight: 7#

Who: NRL Mastenbrook - Neoprene Carrier

What: Beacon, Baro., I.P. Baro., Descent switch, flasher, valve, chute

Duration: Unknown Load on Balloon: 34.3#

Gross Load: 41.3# Free Lift: 7# 17% gross load

Maximum Altitude: 38,000 ft. Rate of Rise: 1102 ft/min to 37,500 ft.

Theoretical Altitude: Altitude Maintenance: Good

Recovery: where? None to 12-5-52

Balloon Success: Excellent

Critique: Neoprene carrier floated as desired.

Scientific Purpose: Neoprene Carrier

Scientific Success as Known:

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 902 Balloon Serial No.: 54071-38

Date: 15 Sept. 1952 Launching Time: 2230 Type: D.A N-28 Weight: 8.8#

Who: NRL Mastenbrook - Neoprene Carrier

What: 40 GHU Beacon, Baro, Flasher, Descent Switch, I.P. Baro., Valve

Duration: 1.6 hrs. to Impact Load on Balloon: 36.2#

Gross Load: 45# Free Lift: 8# 17% gross load

Maximum Altitude: 38,853 ft. Rate of Rise: 1295 ft/min to 38,000 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 4 mi. NW Richland Center, Wis. when? 17 September 1952

Balloon Success: Poor

Critique: Valve failed to maintain altitude and flight terminated early.

Scientific Purpose: Neoprene carrier

Scientific Success as Known:

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 904 Balloon Serial No.: 54071-36

Date: 16 September 1952 Launching Time: 2036 Type: D-A N-28 Weight: 9.3#

Who: NRL Mastenbrook - Neoprene Carrier

What: 40 MOPA Beacon, Baro., Neo-Flasher, Descent Switch, Valve

Duration: 1 1/2 hr. to impact Load on Balloon: 37.2#

Gross Load: 46.5# Free Lift: 8# 17% gross load

Maximum Altitude: 37,334 ft. Rate of Rise: 985 ft/min to 37,300 ft.

Theoretical Altitude: Altitude Maintenance:

Recovery: where? 5 Mi. NW Lake City, Minn. when? 16 October 1952

Balloon Success: Poor

Critique: Valve action failed to keep balloon system afloat.

Scientific Purpose: Neoprene carrier

Scientific Success as known:

GENERAL MILLS, INC.
Mechanical Division
Engineering Research and Development Department
Minneapolis, Minnesota

FLIGHT SUMMARY

Flight No.: 801 Balloon Serial No.: 47065

Date: 17 Sept. 1952 Launching time: 2038 Type: D-A N-28 Weight: 6.9#

Who: MEL Mastenbrook - Neoprene Carrier

What: Beacon, Baro., Flasher, Descent Switch, I. P. Baro, Valve, Parachute

Duration: Unknown Load on Balloon: 35.4#

Gross Load: 42.3# Free Lift: 7# 17% gross load

Maximum Altitude: 34,490 ft. Rate of rise: 1050 ft/min to 34,490 ft.

Theoretical Altitude: Altitude Maintenance: Good

Recovery: where? 9 Mi. S. Petosky, Mich.

Balloon Success: Excellent

Critique: Very good test of system, altitude maintenance of neoprene carrier good.

Scientific Purpose: Neoprene Carrier

Scientific success as known: